NetCommWireless

Low Power Mode

Technical Support Guide

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Please note: This document is subject to change without notice.

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Introduction

This document describes the power consumption statistics and power management features of the NetComm Wireless NTC-6200 and NTC-140W-02 routers.

Intended audience

The individual reading this document is assumed to have a good understanding of telecommunications technologies and electronics. This document is also intended for customers using the applicable devices in situations where reducing power consumption is of great importance such as when the router is running on solar power.

Applicable devices

This document is applicable to the following NetComm Wireless devices:

- NTC-6200
- NTC-140W-02

Power management

The NTC-6200 and NTC-140W-02 routers can be configured to enter or return from a low power 'sleep' mode. You can configure this to occur automatically after a timer has expired, by the status of the ignition pin, a combination of timer and ignition pin status or by manually triggering sleep mode.

During the sleep state, the router is effectively powered off. That is, it has no ability to communicate wirelessly or process any information. When in sleep mode, it draws approximately 5mA current at 12V. When sleep state is triggered, the router takes approximately 30 seconds to enter low power mode. When the wake up sequence is initiated, the router takes approximately 2 minutes to return from the sleep state. This is because returning from sleep state involves a full boot up sequence.

Ignition pin

Both the NTC-6200 and the NTC-140W-02 have a dedicated input called "Ignition". This input is intended for connection to an ignition switch in vehicular applications or where an input to switch the device to a sleep/wake mode is required.

The Ignition input threshold voltage is around 3V. The input responds to a high input state (above 3V). A signal below this level is considered as a low state. If the software is configured to activate in the low state, for example 0V, it must still have the high state above 3V to turn it off.

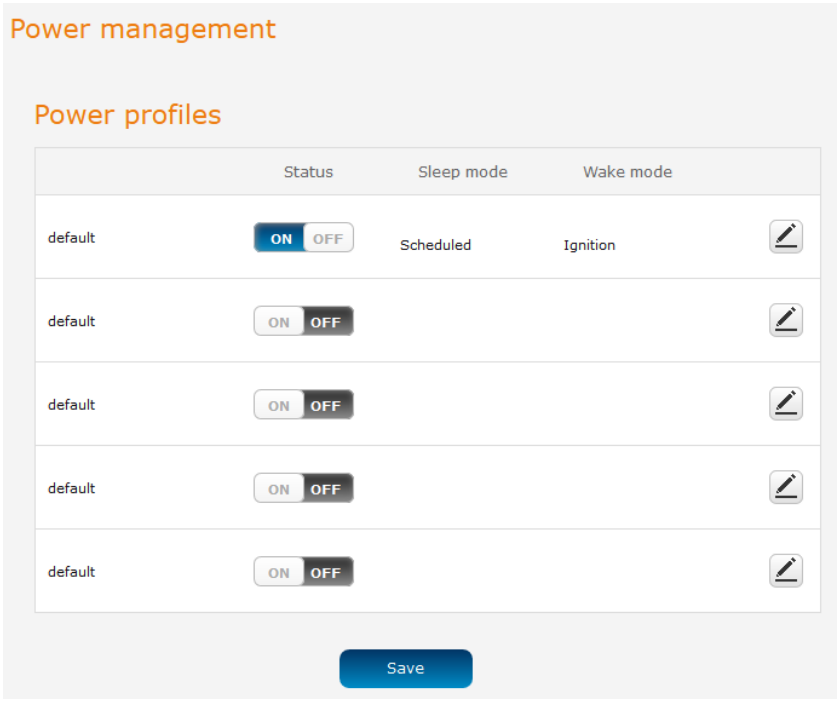
Note: There is a period of about 10 seconds after sleep state has been triggered where the ignition line cannot be monitored. Please take this into account when designing your ignition power on system.

Power management profiles (NTC-140W-02 only)

The NTC-140W-02 provides you with the ability to create up to five power profiles which may all be active simultaneously. The Status column indicates whether the profile is active, while the Sleep mode and Wake mode columns summarise the method used to sleep or wake the router.

To access the Power management page, click the **System** menu item, then select the **Power management** menu item on the left.

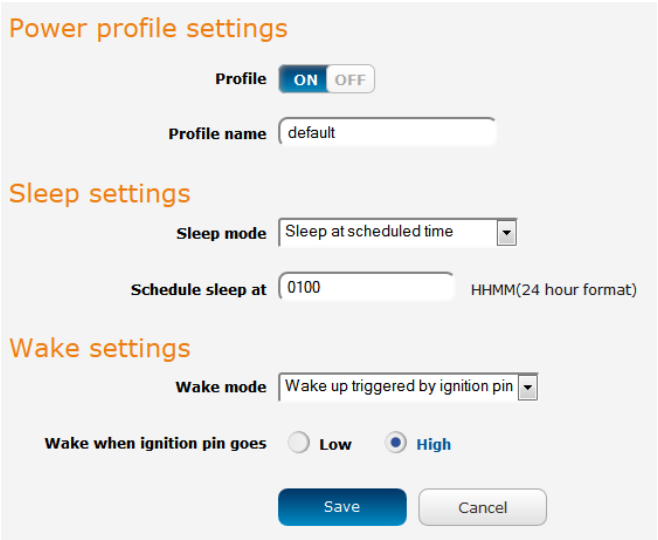
Note: When configuring multiple power profiles, be careful so that they do not overlap or conflict with one another, for example, configuring a schedule which wakes up the unit when another profile has it scheduled to be in low power mode.



Configuring power management

NTC-140W-02

To begin using Low power mode, click the Edit button for one of the profiles. The Power profile settings page is displayed. Extra settings are displayed. These settings, including the enabling or disabling of Low power mode functionality, only take effect when you click the **Save** button.

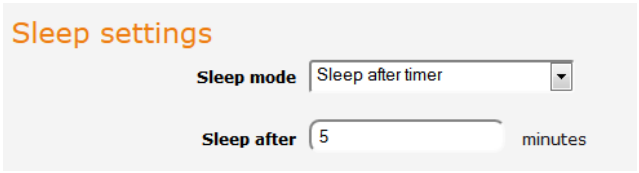


Sleep settings

Use the **Sleep mode** drop down list to select a condition under which the router should enter the sleep state.

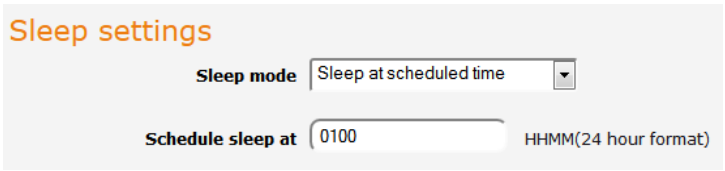
Sleep after timer

When this mode is selected, the router will enter the sleep state after the number of minutes specified in the **Sleep after** field, regardless of the state of the ignition pin.



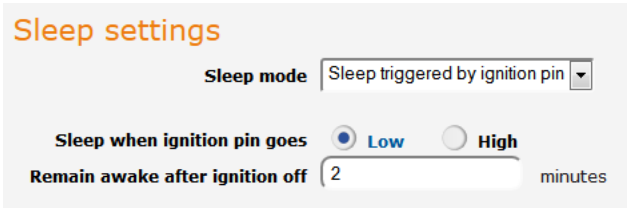
Sleep at scheduled time

When this mode is selected, the router goes to sleep at the time specified in the **Schedule sleep at** field, regardless of the state of the ignition pin. Enter the time in 24 hour format without the semi-colon.



Sleep triggered by ignition pin

This mode sets the router to enter sleep state when the signal on the ignition pin reaches the specified value.



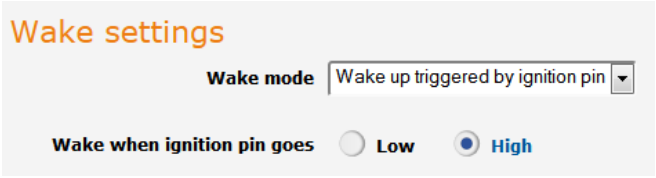
Use the **Sleep when ignition pin goes** setting to select **Low** or **High**. By default, this is set to **Low.** Additionally, the router will stay on for the number of minutes specified in the **Remain awake after ignition off** field. The minimum value for this field is 2 minutes with the maximum being 255 minutes.

Wake settings

Use the **Wake mode** drop down list to select a condition under which the router should return from the sleep state.

Wake triggered by ignition pin

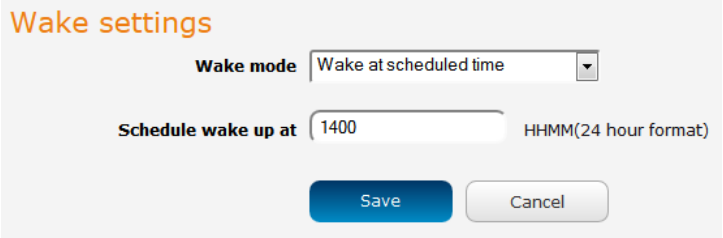
This mode sets the router to wake up when the signal on the ignition pin reaches the specified value.



Use the **Wake up when ignition pin goes** setting to select **Low** or **High**. By default, this is set to **High.**

Wake up at scheduled time

When this mode is selected, the router wakes up at the time specified in the **Schedule wake up at** field, regardless of the state of the ignition pin. Enter the time in 24 hour format without the semi-colon.



Enter the time in seconds to wait before returning from sleep state in the **Always wake up after** field. A setting of 0 means that the router will automatically wake from sleep state immediately.

NTC-6200

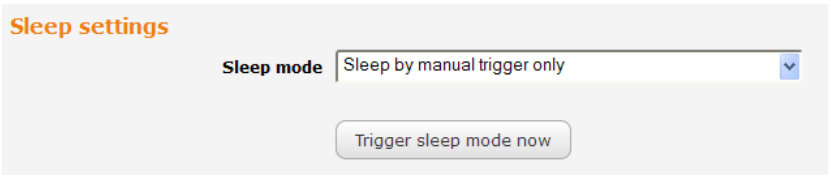
To begin using Low power mode, set the **Low power mode functionality** toggle key to the **ON** position. Extra settings are displayed. These settings, including the enabling or disabling of Low power mode functionality, only take effect when you click the **Save** button.

Sleep settings

Use the **Sleep mode** drop down list to select a condition under which the router should enter the sleep state.

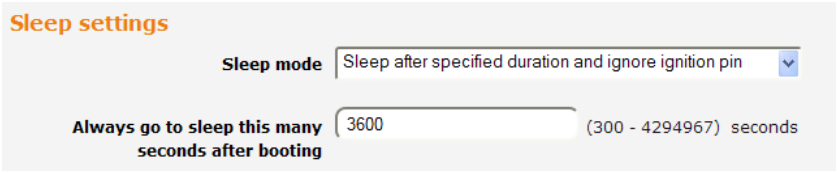
Sleep by manual trigger only

When this mode is selected, the router will only enter the sleep state when the **Trigger sleep mode now** button is pressed. The **Trigger sleep mode now** button is not available unless Low power functionality has been selected and the setting saved.



Sleep after specified duration and ignore ignition pin

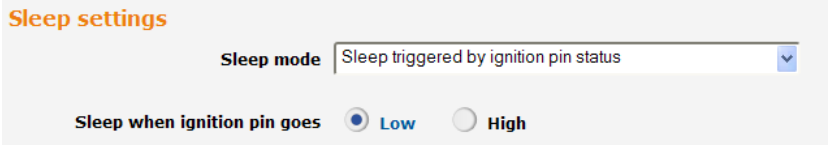
When this mode is selected, the router goes to sleep after the specified time period regardless of the state of the ignition pin.



Enter the time in seconds to wait before entering sleep state in the **Always go to sleep this many seconds after booting** field. A setting of 0 means that the router will never enter sleep state.

Sleep triggered by ignition pin status

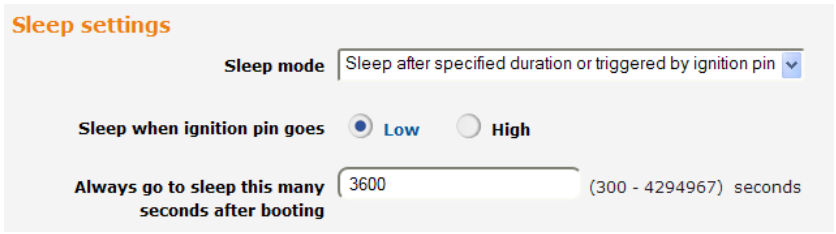
This mode sets the router to enter sleep state when the signal on the ignition pin reaches the specified value.



Use the **Sleep when ignition pin goes** setting to select **Low** or **High**. By default, this is set to **Low.**

Sleep after specified duration or triggered by ignition pin

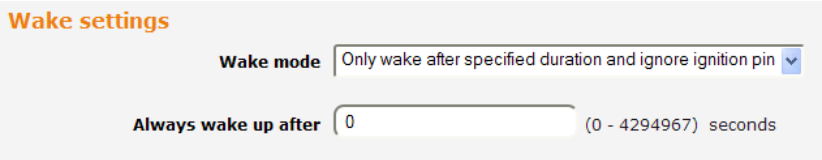
This option sets the router to go to the sleep state on one of two conditions, depending on which condition is reached first. These conditions are based on the state of the ignition pin and a timer. For example, based on the configuration in the screenshot below, the router will go to sleep state when the ignition pin goes low or after 3600 seconds (1 hour), depending on which condition occurs first.



Wake settings

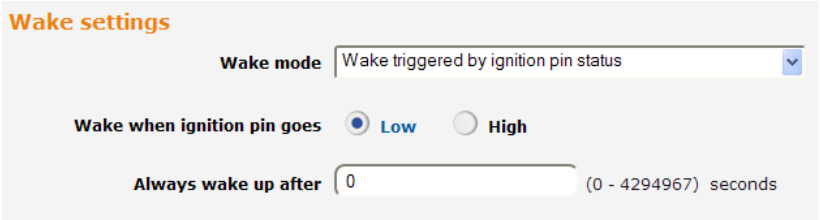
Use the **Wake mode** drop down list to select a condition under which the router should return from the sleep state.

Only wake after specified duration and ignore ignition pin
When this mode is selected, the router wakes up after the specified time period regardless of the state of the ignition pin.



Enter the time in seconds to wait before returning from sleep state in the **Always wake up after** field. A setting of 0 means that the router will automatically wake from sleep state immediately.

Wake triggered by ignition pin status
This mode sets the router to wake up when the signal on the ignition pin reaches the specified value.



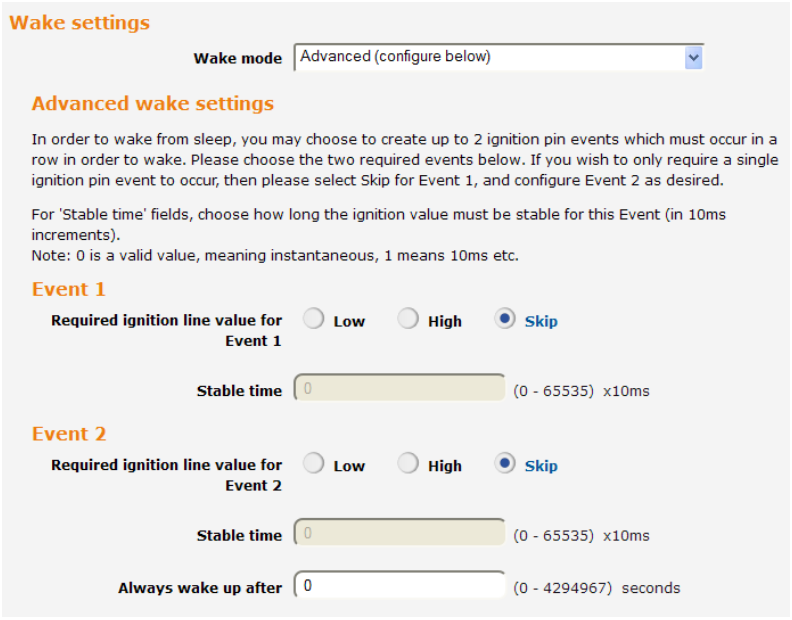
Use the **Sleep when ignition pin goes** setting to select **Low** or **High**. By default, this is set to **Low.**

Advanced wake settings

The advanced wake settings screen gives you finer control over the events causing the router to wake up. In advanced wake mode, you can configure the router to monitor for up to 2 changes in the status of the ignition pin along with how long those status changes should last for to trigger a single wake up event. When selected, Event 1 and Event 2 must happen consecutively in that order to satisfy each condition.

Note: If you do not wish to specify 2 events you should select to skip Event 1, in which case the router will only monitor Event 2 to trigger a wake up.

There is also a provision to reboot the router after a specified period of time, regardless of whether the conditions of Events 1 and/or 2 are met. This can be viewed as a fall back option in the case that those Events are missed.



To configure advanced wake settings:

1. Set **Wake mode** to **Advanced (configure below)**.
2. Under **Event 1**, select whether you want the ignition pin value to be **Low** or **High.** If you want to skip this event, select the **Skip** option.
3. In the Event 1 **Stable time** field, enter the length of time expressed in milliseconds that the value of the ignition line should remain low or high. For example, to specify 10 seconds, enter a value of 1000.
4. Under **Event 2**, select whether you want the ignition pin value to be **Low** or **High.** If you want to skip this event, select the **Skip** option.
5. In the Event 2 **Stable time** field, enter the length of time expressed in milliseconds that the value of the ignition line should remain low or high.
6. In the **Always wake up after** field, enter the time in seconds after which the router should wake up, regardless of whether Event 1 or 2 has occurred.

When in low power mode and Advanced wake mode is configured, the router waits for Event 1 to occur, then it monitors for Event 2. If Event 2 occurs before Event 1, it will not trigger the condition for either event to have occurred. If Event 1 occurs and then Events 2 occurs, the router wakes up. Alternatively, if neither or only one of the events occurs, the router waits for the time specified in the **Always wake up after** field and then wakes up when that time has been reached.

Power consumption

The following power consumption tables were calculated using a variable power supply with the router at factory default settings and features being turned on incrementally. Due to the large number of variables such as operating environment and cellular signal strength, the figures in these tables should be considered as only an indication of the type of power consumption you can expect.

NTC-6200

Firmware version: 1.10.40.7

CONFIGURATION						POWER CONSUMPTION			
Ethernet	LEDs	Serial Port	Data Profile Status	GPS	Power Supply (V, Volts)	Minimum current (mA)	Maximum current (mA)	Minimum Power (W)	Maximum Power (W)
✗	✗	✗	✗	✗	12	3.52	3.58	0.04	0.04**
✗	✗	✗	✗	✗	12	85	135	1.02	1.62
✗	✓	✗	✗	✗	12	106	160	1.28	1.92
✗	✗	✗		✗	12	149	177	1.79	2.13
✗	✗	✓		✗	12	121	153	1.45	1.83
✗	✓	✓		✓	12	173	259	2.08	3.11
✓	✓	✗	✗	✗	12	124	168	1.49	2.01
✓	✗	✗		✗	12	167	205	2.01	2.46
✓	✗	✓		✗	12	167	206	2.00	2.47
✓	✓	✓		✓	12	125	183	1.50	2.19
✓	✓	✓		✓	12	194	368	2.33	4.41

Key

✗ Function disabled ✓ Function enabled  Function is idle  Traffic on interface

* The above figures are indicative only. Variables such as RF signal strength and power input can affect power consumption, therefore you may see different values under normal use.
* In scenarios where a data profile is connected, the network technology in use is WCDMA850.
* In scenarios where the data profile has traffic, the unit is running a continuous ping to IP 8.8.8.8 and streaming YouTube video.
* The tests were conducted on an NTC-6200-01 to make use of the full feature set. The scenarios where GPS is enabled are not applicable to the NTC-6200-03 and NTC-6200-13.

** Unit is in sleep mode.

NTC-140W

Firmware version: 2.0.23.4

CONFIGURATION						POWER CONSUMPTION			
Ethernet	LEDs	WiFi	Data Profile Status	GPS	Power Supply (V, Volts)	Minimum current (mA)	Maximum current (mA)	Minimum Power (W)	Maximum Power (W)
✗	✗	✗	✗	✗	12	13	15	0.156	0.18**
✗	✗	✗	✗	✗	12	202	216	2.42	2.592
✓	✗	✗	✗	✗	12	200	206	2.4	2.472
✓	✓	✗	✗	✗	12	218	237	2.616	2.844
✓	✓	✓	✗	✗	12	214	253	2.568	3.036
✓	✓	✓	🕒	✗	12	235	311	2.82	3.732
✓	✓	✓	⇅	✗	12	243	332	2.916	3.984
✓	✓	⇅ AP	⇅	✓	12	266	361	3.192	4.332
✓	✓	⇅ Client	⇅	✓	12	306	400	3.672	4.8
✓	✓	⇅ AP	🕒	✓	12	267	362	3.204	4.344
✓	✓	⇅ AP	⇅	✓	12	328	412	3.936	4.944

Key

✗ Function disabled ✓ Function enabled 🕒 Function is idle ⇅ Traffic on interface

* The above figures are indicative only. Variables such as RF signal strength and power input can affect power consumption, therefore you may see different values under normal use.
* In scenarios where a data profile is connected, the network technology in use is WCDMA850.
* In scenarios where the data profile has traffic, the unit is running a continuous ping to IP 8.8.8.8 and streaming YouTube video.

** Unit is in sleep mode.